# SCALLOP TRAWL GEAR CHARACTERISTICS LOG

This log contains detailed questions about the gear fished. Complete a new log for each uniquely configured gear (as defined below) **hauled** during a trip. These unique configurations may be based on changes made to the length of the headrope, mesh size in the codend, *etc*. Any changes in these fields require the completion of another Scallop Trawl Gear Characteristics Log. Do not soley use the COMMENTS section to explain these differences among gears. Number each gear configuration sequentially.

Note that a Scallop Trawl gear is defined as a distinct combination of trawl nets (port and starboard) deployed during the trip. Both port and starboard nets, if used, will be described.

If the gear is set out and hauled more than once during a trip, do not complete a new ScallopTrawl Gear Characteristics Log for the multiple hauls. Rather, record on the Scallop Trawl Haul Log which gear numbers are being hauled. In addition, record any other information necessary to understand the manner in which the gear was set/hauled in COMMENTS.

If the vessel has two or more identical gears that are hauled during the trip, complete only one Scallop Trawl Gear Characteristics Log, and record the consecutively assigned numbers of all identical gears described in GEAR NUMBER(S) (#1). See the trawl definitions below and GEAR NUMBER(S) (#1) for more information on defining and numbering gears.

If information is unavailable or unknown to any question except a “No/Yes” question, record a dash (-) in the field. If the answer to a “No/Yes” question is unknown, record a “9” on the line next to the code for "No" to indicate that the field was not skipped, but the answer is unknown. If a field relates to a question to which you previously answered “No”, leave the field blank.

Become familiar with the following definitions.

## DEFINITIONS

**Otter Trawl:** A device constructed of twine webbing so that when fully assembled and rigged, it will take the shape of a huge funnel while being towed. To spread the mouth so that it will cover the largest possible area, each wing is fastened to a trawl “door”. Each door is fitted with chains to be attached to a towing cable from the trawling vessel. The resistance of the water to the forward motion of the doors, as they are towed at different angles, forces them to pull in opposite directions and thus keep the mouth of the net open.

**Square**: The section of netting fitted between the top body and the two top wings so that it partially overhangs the FOOTROPE.

**Top Wings**: Two sections of netting usually shaped diagonally opposite to one another to form the upper mouth of the trawl. The HEADROPE is attached from one top wing end to the other, along the diagonal flymesh edges and across the bosom or center part of the square.

**Lower Wings**: Two narrow sections of netting fitted between the lower belly and the top wings to form the lower lip of the trawl net. The FOOTROPE is attached from one wing end to the other, along the flymesh edges and across the lower belly bosom meshes. The lower wings are subject to the most abrasion, and consequently they are the sections which have to be continually repaired or replaced when working rough ground.

**Codend**: Two rectangular pieces of netting made with heavy twine. The top edges are joined to the narrow end of the bellies, the selvedges are laced together and a codline or codend clip is woven through the lower meshes for securing the section into a bag where the fish are held until released onboard the trawler.

The codend is the section of a trawl net most often affected by mesh size regulations. The size of the codend depends on the species being targeted and regulations.

**Codend Liner:** A section of small mesh net sewn into the inside of the codend bag. The purpose of which is to restrict the escapement of smaller species, *i.e.* squid.

**Codend Strengthener:** Any material attached to the outside of the codend bag to prevent a full codend from bursting when it is being lifted aboard. This material may be in the form of strengthening ropes, which are attached lengthwise and/or circumferentially to restrict stretching of the codend,

or a strengthening/lifting bag, which is a cylinder of netting surrounding the codend. A strengthening bag may also be considered chafing gear.

**Fishing Circle**: The section of the net located behind the wings and before the belly. It is the area which creates the largest opening in the net.

**Headrope**: The line, generally of fiber rope or steel wire rope, which fits along the top wings and center part of the square to form the upper lip of the otter trawl.

**Escape Outlet**: An opening in the net to facilitate escape of fish, sea turtles, marine mammals, *etc.*

**Gear**: A scallop trawl, commonly referred to as "the net(s)". This includes ground cables, headrope, footrope, floats, weights, netting and any attached equipment of two nets. Scallop Trawl gear is defined as a distinct combination of scallop nets (port and starboard) deployed during the trip. Both port and starboard nets, if used, should be described.

## INSTRUCTIONS

For instructions on completing the Header Fields **A, B and D** refer to the Common Haul Log Data section of the NEFSC Observer Program Manual.

**1. GEAR NUMBER(S):** Record the consecutive number(s) assigned to each uniquely configured gear hauled.

Example: The first uniquely configured gear is gear number "1", and may consist of a port net and a starboard net. The characteristics for both the port and starboard nets are recorded on separate Scallop Trawl Gear Characteristics Log. This gear number ("1") will be used on the Scallop Trawl Haul Log for each haul and will reflect that both the port and starboard net are fishing. If at any time, the gear configuration on either the port or starboard net changes, a new consecutive gear number ("2") will be assigned.

**2. NET LOCATION:** Record the location where the net is deployed.

1 = Port.
2 = Starboard.
4 = Aft.
9 = Other.

**NOTE:** Aft refers to a single net fished over the stern of the vessel.

## DOORS

**3. USED?:** Record whether doors are used with this gear by placing an "X" next to the appropriate code (see Figure 3):

0 = No.
1 = Yes.

**4. WEIGHT:** Record, in whole kilograms, the weight of **one** door used with this gear. This information may be obtained from the captain.

**5. NET NAME:** Record the common name of the net. If it does not have a common name, record comments on any characteristics (ex; short vertical opening, sweep gear not heavy) that help to identify the net. This information may be obtained from the Captain.

Example: Bottom Trawl.

**6. NET TYPE:** Record the name of the net type used. This information may be obtained from the Captain.

**7. NET BUILDER:** Record the name of the company or individual who made this net. This information may be obtained from the Captain.

**NOTE:** If built by the Captain or crew record "custom" built in this field.

Examples: Shuman.
Noreastern Trawl Systems Inc.

## CONSTRUCTION MATERIAL

**8. TYPE:** Record the type of construction material used in the body of the net (excluding the codend) and the codend by placing an "X" next to the appropriate code:

00 = Unknown.
01 = Nylon.
02 = Poly.
03 = Kevlar®.
04 = Spectra®.
05 = Tenex®.

06 = Nomex®.
98 = Combination, record all construction material types on line 8A.
99 = Other, record the construction material type on line 8A.

**9. NETS CONNECTED?**
Record whether the two nets are connected to each other while fishing, by the center ground cables or bridles? See Figures 1 and 2.
0 = No.
1 = Yes.

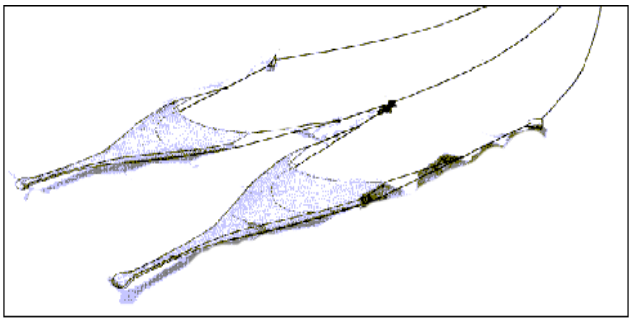

**Figure 1. Example of nets connected.**

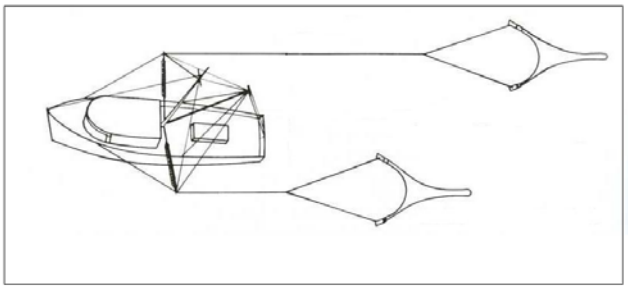

**Figure 2. Example of nets not connected.**
**Photo courtesy of: Sainsbury, J. (1996). Commercial fishing methods. 3rd ed. Cambridge: Univeristy Press.**

## KITE PANEL

**10. KITE USED?:** Record whether a kite(s) is (are) used in this net by placing an "X" next to the appropriate code:
0 = No.
1 = Yes.

**11. NUMBER:** Record the **total** number of panels used in a kite in this net.

**12. WIDTH:** Record, in whole inches, the average width of the panels used in a kite in this net. This measurement will be taken along the edge of the panel which is parallel to the headrope.

**13. LENGTH:** Record, in whole inches, the average length of the panels used in a kite in this net. This measurement will be taken along the edge of the panel which is perpendicular to the headrope.

## LENGTH MEASUREMENTS

**14. HEADROPE:** Record, in whole feet, the length of the rope along the top of the net. This information may be obtained from the captain. See Figure 3.

**15. FOOTROPE/SWEEP:** Record, in whole feet, the length of the rope along the bottom of the net. This information may be obtained from the captain. See Figure 3.
**NOTE:** This measurement is the distance from the lower bridle on one side of the net to the lower bridle on the other side of the net.
**NOTE:** The footrope may also be referred to as a fishing line in some regions.

**16. GROUND CABLE:** Record, in whole fathoms, the length of the wire connecting the bridles and the back strap. This information may be obtained from the Captain. See Figure 3.
**NOTE:** The ground cable may also be referred to as a sweep in some regions.

**17. BRIDLE:** Record, in whole fathoms, the length of the upper bridle on one side of the net. This information may be obtained from the Captain. See Figure 3.
**NOTE:** The bridles may also be referred to as legs in some regions.

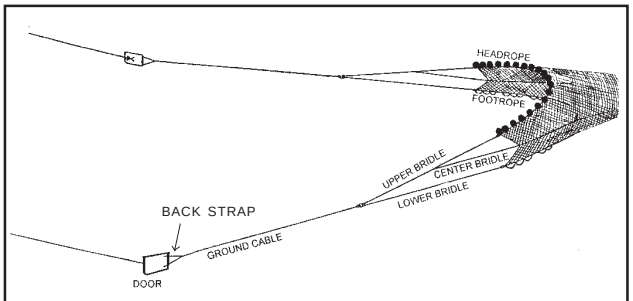


**Figure 3. Doors, ground cable, bridles, footrope, and headrope.**

## FISHING CIRCLE

**18. NUMBER OF MESHES:** Record the number of meshes in the fishing circle. This information may be obtained from the captain. See Figure 8 for the location of the fishing circle.

**19. FISHING CIRCLE MESH SIZE:** Record, to the nearest tenth of an inch, the largest mesh measurement (inside knot to knot) from the fishing circle. This information may be obtained from the Captain. See figure 4.

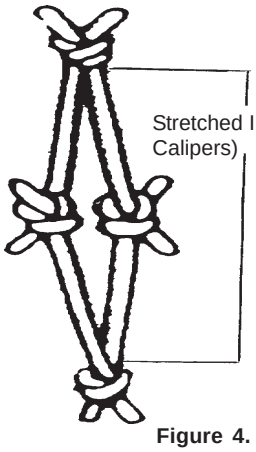


**Figure 4. Illustration of Diamond Mesh.**

## GROUND GEAR

**20. TYPE:** Record the type of gear making up the ground cable, the bridles/legs, and the sweep by placing an "X" next to the appropriate code (see Figures 3, 5 and 6):

00 = Unknown.
01 = Chain.
02 = Cable/Wire.
03 = Wrapped Cable.
04 = Rock Hopper.
05 = Roller.
06 = Rubber Cookie.
07 = Bobbin (Half Round).
08 = Plate Gear.
98 = None.
99 = Other, record the ground gear type on line 20A.

**NOTE: If more than one type of gear is used on a ground gear piece, record the type of the LARGEST piece of gear used. This is not always the longest piece.**

Example: If the sweep has 80 feet of 1 inch wire, 25 feet of 3 inch rubber cookies and 15 feet of 5 inch rollers, record "Roller" (5) for SWEEP GROUND GEAR TYPE. See Figure 5.

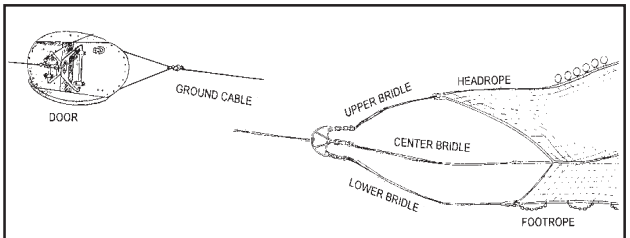


**Figure 5. Doors, gound cable, bridles, headrope, and footrope.**

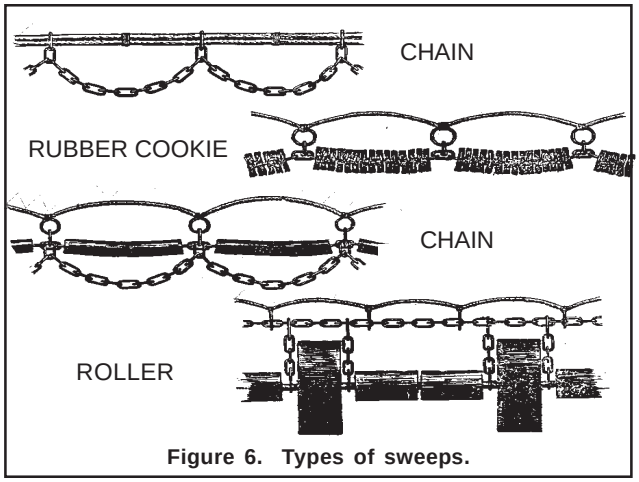


**Figure 6. Types of sweeps.**

## SWEEP GEAR

**21. NUMBER:** Record the total number of the largest piece of gear present on the sweep (rollers, rock hoppers). Ask the Captain if you are unable to obtain this number.

**NOTE:** If the largest piece of gear used on the sweep is chain or cable/wire or wrapped cable then dash this field.

**22. SIZE:** Record the diameter, in whole inches, of the largest piece of gear present on the sweep. Ask the Captain if you are unable to measure this.

**NOTE:** If the largest piece of gear used on the sweep is chain or cable/wire or wrapped cable then dash this field.

**NOTE:** If the largest type of gear on the sweep (i.e. rollers) are of multiple

sizes (i.e. 5 inch and 3 inch), measure and record the diameter of the largest one.

**NOTE:** If the largest type of gear on the sweep is plate gear, measure the diagonal length of the plate.

## FLOATS

**23. NUMBER:** Record the total number of floats attached to the headrope.

**24. SIZE:** Record the diameter, in whole inches, of the majority of floats attached to the headrope.

## CODEND

**25. HUNG:** Record the hanging configuration of the codend by placing an "X" next to the appropriate code:

0 = Unknown.
1 = Diamond (see Figure 7).
2 = Square (see Figure 7).
3 = Square, Wrapped.
8 = Combination, record the hanging configuration in COMMENTS.

**NOTE:** If the codend is wrapped, this is considered chafing gear. Be sure to record "Yes" (1) for CHAFING GEAR USED (#31).

**NOTE:** See Figure 8 for the location of the codend.

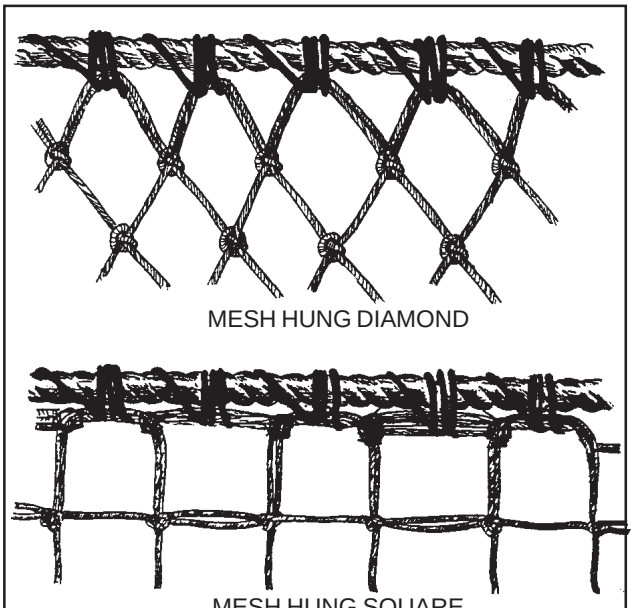


**Figure 7. Mesh hanging patterns.**

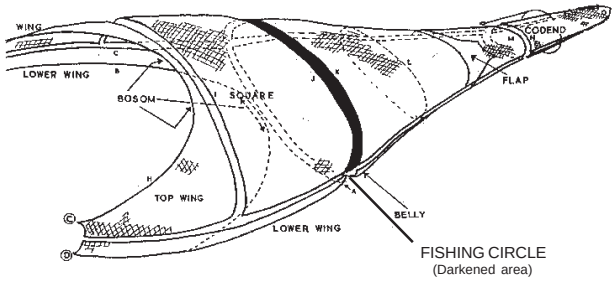


**Figure 8. The sections of netting that make a trawl.**

**26. TWINE TYPE:** Record whether the twine used in the codend is single or double stranded by placing an "X" next to the appropriate code:

1 = Single.
2 = Double.
3 = Single on Top/Double on Bottom.
9 = Other, record the twine type in comments.

**27. CODEND MESH SIZE:** Record, in whole millimeters, ten randomly selected meshes from the codend. These measurements should be stretched inside knot to knot taken in the direction in which the mesh is hung. Use calipers for these measurements. See Figure 4 and Appendix P. Vernier Caliper Instructions for further information.

**NOTE:** These measurements are **not** bar lengths.

**NOTE:** Select a portion of the net that is relatively free from mends. Count at least 5 meshes up from the terminus of the codend and 5 meshes in from the side seam. Take measurements while the net is empty and wet. To ensure the net is "wet" or "soaked," it is preferably measured after being fished or used for at least one haul. Measurements should not be taken when the codend is frozen.

**28. LINER USED?:** Record whether a liner is used inside the net's codend by placing an "X" next to the appropriate code:

0 = No.
1 = Yes.

**NOTE:** See the gear definitions in the intro-

duction.

**29. LINER MESH SIZE:** Record, in whole millimeters, four randomly selected meshes from the liner in the codend. These measurements should be stretched inside knot to knot taken in the direction in which the mesh is hung. Use calipers for this measurement. See Figure 4 and Appendix P. Vernier Caliper Instructions for further information.

**NOTE:** The liner mesh size should be smaller than the codend mesh size.

**30. STRENGTHENER USED?:** Record whether strengthener material is used in the codend of this net by placing an "X" next to the appropriate code:

0 = No.
1 = Yes.

**NOTE:** See the gear definitions in the introduction.

**31. CHAFING GEAR USED?:** Record whether chaffing gear is used on the codend by placing an "X" next to the appropriate code:

0 = No.
1 = Yes.

**NOTE:** A codend in which the meshes are "wrapped" is considered to have chafing gear. A codend with a strengthening bag is also considered to have chafing gear.

## GEAR MOUNTED ELECTRONICS

**32. USED?:** Record whether any transducers are used on this gear by placing an "X" next to the appropriate code:

0 = No.
1 = Yes.

**33. NUMBER OF TRANSDUCERS:** Record the number of transducers used on this gear.

**34. TYPE:** Record the type of transducer used on this gear by placing an "X" next to the appropriate code:

0 = Unknown.
1 = Wired.
2 = Wireless.
3 = Both.

**35. BRAND:** Record the brand of transducers used on this gear by placing an "X" next to the appropriate code:

0 = Unknown.
1 = Furuno®.
2 = Simrad®.
3 = Northstar Technical.
4 = Notus.
5 = Marport.
6 = Scanmar.
8 = Combination, record all transducer brands on line 35A.
9 = Other, record the transducer brand on line 35A.

**36. LOCATION:** Record the location of transducers used on this gear by placing an "X" next to the appropriate code (see Figures 3 and 8):

0 = Unknown.
1 = Headrope.
2 = Wings.
3 = Footrope.
4 = Headrope and Footrope.
5 = Door.
6 = Codend.
8 = Other Combination, record all transducer locations on line 36A.
9 = Other, record the transducer location on line 36A.

**37. NUMBER OF RECEIVERS:** Record the **total** number of receivers used on this vessel for the transducer(s).

## EXCLUDER/SEPARATOR DEVICE

**38. USED?:** Record whether an excluder or separator device is used on this gear by placing an "X" next to the appropriate code (see Figure 9):

0 = No.
1 = Yes.

**39. TYPE:** Record the type of excluder or separator device used on this gear by placing an "X" next to the appropriate code:

00 = Unknown.
01 = Nordmore Grate (see Figure 9).
03 = Separator Panel.
04 = Guiding Device, *i.e.*, a funnel or "flap" (see Figure 9).

05 = Raised Footrope.
20 = T.E.D., Unknown.
21 = Standard T.E.D. (see Figure 9)
22 = Weedless T.E.D.
23 = Flounder T.E.D. (see Figure 9)
24 = Bent Rod T.E.D.
25 = Conch T.E.D. (see Figure 9)
26 = Flat Bottom T.E.D.
27 = Whelk T.E.D.
28 = Flexible T.E.D.
29 = Parker Soft T.E.D.
30 = Experimental T.E.D.
98 = Combination, record all excluder/separator device types in comments.
99 = Other, record the excluder/separator device type on line comments.

**NOTE:** See Figure 9 in the Otter Trawl Gear Characteristics Log instructions for an illustration of T.E.D. types.

**40. T.E.D. EXTENSION MESH SIZE:** Record, to the nearest tenth of an inch, the size of the mesh of the T.E.D. extension or the webbing surrounding the T.E.D. This measurement should be taken 3-5 meshes forward of the leading edge of the grid. These measurements should be stretched inside knot to knot taken in the direction in which the mesh is hung. See Figure 10.

**NOTE:** The T.E.D. extension is a cylindrical piece of webbing distinct from the main trawl body, wings, codend and any other net extension(s).

## ESCAPE OUTLET

**41. USED?:** Record whether a escape outlet is used on this gear by placing an "X" next to the appropriate code (see Figure 8):

0 = No.
1 = Yes.

**42. ESCAPE OUTLET TYPE:** Record the type of escape outlet used on this gear by recording the appropriate code:

0 = Unknown.
1 = Panel.
2 = Opening.
3 = Single Flap.
4 = Double Flap.
9 = Other, record the escape outlet type on line 42A.

**43. MESH SIZE (LENGTH AND WIDTH):** Record, in whole inches, the average size for the length (runs from the front of the net towards the codend) and the width (runs from side to side of the net) of the meshes used in the escape outlet. This number may be obtained from the Captain.

**NOTE:** It is preferred that all Escape Outlet measurements be taken by # MESHES (#44) and MESH SIZE (#43). Length and Width in inches of the escape outlet is an acceptable secondary method.

**44. # MESHES (LENGTH AND WIDTH):** Record the number of meshes for the length (runs from the front of the net towards the codend) and width (runs from side to side of the net) of the escape outlet. These numbers may be obtained from the Captain.

**NOTE:** For T.E.D. outlets, the width measurement is taken by counting the number of meshes along the leading edge of the opening. If this cannot be obtained by the observer then dash this field.

**NOTE:** If the outlet shape is triangular, record the # of meshes on the side of the triangle which runs from side to side in the net for both length and width .

**NOTE:** If the outlet shape is trapezoid, record the number of meshes that are in the longer length and the wider width.

**45. ESCAPE OUTLET SIZE (LENGTH AND WIDTH):** Record, in whole inches, the length (runs from the front of the net towards the codend) and width (runs from side to side of the net) of the escape outlet. This information may be obtained from the Captain.

**46. SHAPE:** Record the shape of the escape outlet by recording the appropriate code:

00 = Unknown.
01 = Rectangular.
05 = Trapezoid.
06 = Square.
07 = Diamond.
08 = Triangular.
09 = Semi-Circle.
11 = Horizontal Cut.
99 = Other, record the escape outlet shape in

comments.

**47. LOCATION:** Record the location of the escape outlet used on this gear by recording the appropriate code:

0 = Unknown.
1 = Net Top.
2 = Net Bottom.
3 = Net Side.
4 = Codend Top.
5 = Codend Bottom.
8 = Combination, record all escape outlet locations in comments.
9 = Other, record the escape outlet location in coments.

## COMMENTS

Record any additional information about this gear, *i.e.*, unusual arrangements of the gear, type of net, *etc.* If more room is needed, use the back of this log, making sure to write "See Back" on the front of the log. Reference each comment with its corresponding field name.

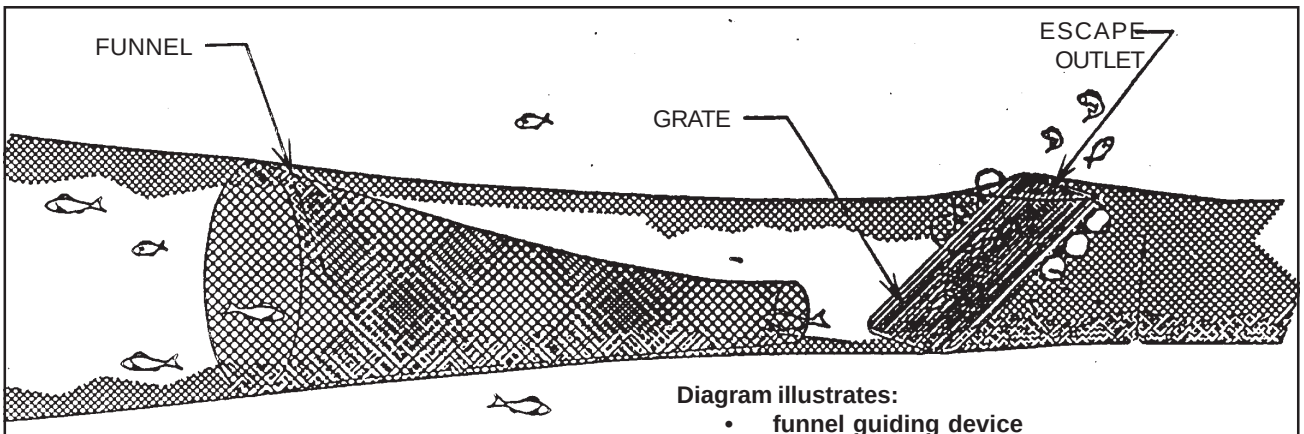


**Figure 9. Funnel, Nordmore grate, and escape outlet.**

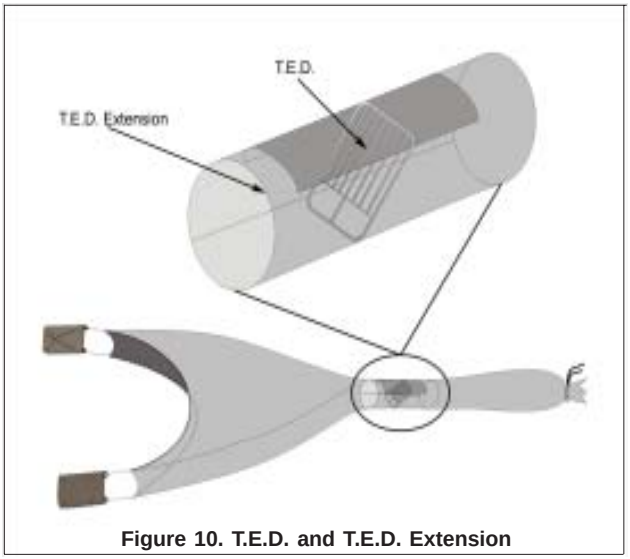


**Figure 10. T.E.D. and T.E.D. Extension**